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HOUSE OF REPRESENTATIVES
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SAKONNET HARBOR, R. I.

LETTER

FROM

THE SECRETARY OF THE ARMY

TRANSMITTING

A LETTER FROM THE CHIEF OF ENGINEERS, UNITED STATES ARMY, DATED MAY 31, 1951, SUBMITTING A REPORT, TOGETHER WITH ACCOMPANYING PAPERS AND AN ILLUSTRATION, ON A REVIEW OF REPORTS ON SAKONNET HARBOR, R. I., WITH A VIEW TO DETERMINING IF FURTHER IMPROVEMENT IS ADVISABLE AT THIS TIME, REQUESTED BY A RESOLUTION OF THE COMMITTEE ON PUBLIC WORKS, HOUSE OF REPRESENTATIVES, ADOPTED ON APRIL 13, 1948

APRIL 23, 1952.—Referred to the Committee on Public Works, and ordered to be printed with one illustration

LETTER OF TRANSMITTAL

DEPARTMENT OF THE ARMY,
Washington, D. C., April 14, 1952.

The SPEAKER OF THE HOUSE OF REPRESENTATIVES.

DEAR MR. SPEAKER: I am transmitting herewith a report dated May 31, 1951, from the Chief of Engineers, United States Army, together with accompanying papers and an illustration, on a review of reports on Sakonnet Harbor, R. I., with a view to determining if further improvement is advisable at this time, requested by a resolution of the Committee on Public Works, House of Representatives, adopted on April 13, 1948.

In accordance with section 1 of Public Law 14, Seventy-ninth Congress, the views of the State of Rhode Island are set forth in the enclosed communication.

98402—52——1

The Bureau of the Budget makes certain comments and advises that, on the basis of the information available to them, the proposed improvement at Sakonnet Harbor should be considered of low priority and a complete reevaluation of the benefits and costs should be made before funds are requested for initiation of construction in order to assure that the Federal expenditures required are justified.

Although the Bureau of the Budget advises that there is no objection to the submission of the report to Congress, it states that any estimate of appropriation for the initiation of this project, if authorized by Congress, must be justified in accordance with the policy set forth in the President's letter to the Secretary of the Army dated July 21, 1950, concerning curtailment of civil public works or any modification thereof. The complete views of the Bureau of the Budget are contained in the attached copy of its letter.

Sincerely yours,

FRANK PACE, Jr.,
Secretary of the Army.

COMMENTS OF THE BUREAU OF THE BUDGET

EXECUTIVE OFFICE OF THE PRESIDENT,
BUREAU OF THE BUDGET,
Washington, D. C., March 31, 1952.

The honorable the SECRETARY OF THE ARMY
(Through the Budget Officer for the Department of the Army).

MY DEAR MR. SECRETARY: Receipt is acknowledged of your letter dated June 13, 1951, submitting the proposed report of the Chief of Engineers on a review of reports on Sakonnet Harbor, R. I., requested by resolution of the Committee on Public Works, House of Representatives, adopted on April 13, 1948.

The Chief of Engineers recommends that the existing project be modified to provide for extending the breakwater northeasterly 400 feet and dredging the harbor to a depth of 8 feet. The estimated cost to the United States of this improvement is $477,200 for construction and $1,300 annually for additional maintenance. Local interests will be required to contribute $18,700 toward the cost of construction which will total $495,900. On the basis of the evaluated annual benefits of $43,820 and estimated annual charges of $20,635, the benefit-cost ratio is estimated to be 2.12.

The evaluated annual benefits comprise $3,000 due to the elimination of vessel damage, $37,125 for increased benefits to the local fishing fleet, $275 for increased benefits to outside fishing vessels and $3,420 for increased benefits to the local recreation fleet. The estimate of increased benefits to the local fishing fleet is based on the assumption that an additional 750,000 pounds of fish would be landed annually by the present fleet due to winter fishing and that an additional 1.5 million pounds would be landed due to the construction of new boats and the transfer of vessels from other locations. The increased catch of 750,000 pounds appears to be an acceptable assumption but it seems highly speculative to credit the proposed improvements with the addition of new and transferred vessels sufficient to produce additional landings equivalent to the entire year's catch of five vessels. The report indicates that at present annual landings

total about 5.5 million pounds of fish and that at New Bedford about 25 percent of the port's catch is landed in the winter. In consideration of these data, it seems rather optimistic to assume that the annual catch at Sakonnet Harbor would increase by more than 40 percent mainly due to the provision of winter fishing. Furthermore, it would seem that any benefits accruing to Sakonnet Harbor due to transferring vessels from neighboring ports would be at least partially offset by the losses thus sustained by those ports and would not redound as a general benefit to the country as a whole.

Considering the type of improvement proposed and the nature of the facilities that would be provided, the expenditures involved appear disproportionately large. Reevaluation of the benefits, adjusted to reflect a consideration of the foregoing observations, might render the economic justification submarginal. Accordingly, I am authorized by the Director of the Bureau of the Budget to advise you that, while there would be no objection to the submission of the report to Congress, on the basis of the information available to us, the proposed improvement at Sakonnet Harbor should be considered of low priority and a complete reevaluation of the benefits and costs should be made before funds are requested for initiation of construction in order to assure that the Federal expenditures required are justified.

The President in his letter to you dated July 21, 1950, directed that all civil public works be considered with the objective, as far as practical, of deferring, curtailing, or slowing down those projects which do not contribute to defense or to civilian requirements essential in the changed international situation. Therefore, any estimate of appropriation for the initiation of this project, if authorized by the Congress, must be justified in accordance with the policy set forth in the President's letter referred to above or any modification thereof.

Sincerely yours,

WM. F. MCCANDLESS,
Assistant Director for Estimates.

COMMENTS OF THE STATE OF RHODE ISLAND

STATE OF RHODE ISLAND AND
PROVIDENCE PLANTATIONS,
DEPARTMENT OF PUBLIC WORKS,
OFFICE OF DIRECTOR,
Providence, May 15, 1951.

Re Sakonnet Harbor, R. I.

LEWIS A. PICK,
Major General, Chief of Engineers,
Department of the Army, Washington 25, D. C.

DEAR GENERAL PICK: I beg to acknowledge with thanks the receipt of your letter of March 29, 1951, and your proposed report, together with the reports of the Board of Engineers for Rivers and Harbors and of the division engineer, with respect to the proposed improvements for Sakonnet Harbor, R. I.

I have reviewed the improvements which are proposed and I find them logical and in line with the desires of the many people who are interested in Sakonnet Harbor. I believe the project will prove of

inestimable value, not only to the local community but to many others who will be attracted to the port by the improved facilities.

I earnestly hope and recommend that everything possible be done to expedite the progress of your report to the end that the improvements as proposed may be initiated at the earliest possible moment.

Arrangements have already been made locally for furnishing the required cash contribution of $18,700 toward the cost of the work proposed and for fulfilling the other conditions specified in your report.

I would be pleased to receive a copy of the transmittal letter when the report is submitted to Congress by the Secretary of the Army.

Sincerely yours,

PHILIP S. MANCINI,
Director, Department of Public Works.

REPORT OF THE CHIEF OF ENGINEERS, UNITED STATES ARMY

DEPARTMENT OF THE ARMY,
OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D. C., May 31, 1951.

Subject: Sakonnet Harbor, R. I.
To: The Secretary of the Army.

1. I submit herewith for transmission to Congress the report of the Board of Engineers for Rivers and Harbors in response to resolution of the Committee on Public Works of the House of Representatives, adopted April 13, 1948, requesting the Board to review the reports on Sakonnet Harbor, R. I., transmitted to Congress on October 15, 1941, and previous reports, with a view to determining if further improvement is advisable at this time.

2. After full consideration of the report secured from the division engineer, the Board recommends modification of the existing project for Sakonnet Harbor, R. I., to provide for extending the breakwater northeasterly 400 feet and dredging the harbor to a depth of 8 feet, generally in accordance with the plan of the division engineer and with such modifications thereof as in the discretion of the Chief of Engineers may be advisable, at an estimated cost to the United States of $465,800 for construction and $1,000 annually for maintenance in addition to that now required, provided that local interests give assurances satisfactory to the Secretary of the Army that they will: (*a*) Contribute $18,700 in cash toward the cost of construction; (*b*) furnish free of cost to the United States all lands, easements, and rights-of-way, necessary for the initial work, and for subsequent maintenance when and as required; and (*c*) hold and save the United States free from damages due to construction and maintenance of the project.

3. After due consideration of these reports, I concur in the views and recommendations of the Board.

LEWIS A. PICK,
Major General, Chief of Engineers.

REPORT OF THE BOARD OF ENGINEERS FOR RIVERS AND HARBORS

DEPARTMENT OF THE ARMY,
BOARD OF ENGINEERS FOR RIVERS AND HARBORS,
Washington, D. C., February 2, 1951.

Subject: Sakonnet Harbor, R. I.
To: The Chief of Engineers, United States Army.

1. This report is submitted in response to the following resolution adopted April 13, 1948:

Resolved by the Committee on Public Works of the House of Representatives, United States, That the Board of Engineers for Rivers and Harbors be, and is hereby, requested to review the reports on Sakonnet Harbor, R. I., transmitted to Congress on October 15, 1941, and previous reports, with a view to determining if further improvement is advisable at this time.

2. Sakonnet Harbor is a shallow, rock-bound cove on the east side of the entrance to the Sakonnet River, 7 miles east of Newport Harbor and 19 miles southwest of New Bedford Harbor. It is about 1,200 feet long and 900 feet wide; is open to the north, but is protected on the east and south by the mainland and on the west to a small degree by a rock point and a breakwater. Depths range generally from 2 to 8 feet in the inner half of the harbor to about 20 feet in the outer less-protected half. A ledge and a pile of loose rock just inside the entrance restrict full use of the harbor. The mean tidal range is 3.3 feet. The harbor has been under improvement by the United States since 1836. The authorized project, completed in 1908, provides for a breakwater 400 feet long and for the removal of rock nearest the breakwater to a depth of 8 feet. Costs to June 30, 1950, were $72,498, of which $62,202 was for new work and $10,296 was for maintenance. Local interests have constructed four privately owned wharves.

3. The town of Little Compton, the business and residential district of which is about 4 miles from Sakonnet Harbor, has a population of 1,500, supplemented by many summer residents. Numerous summer estates are concentrated in the vicinity of the harbor. The residents of the area are supported by fishing and lobstering which, with farming and catering to summer tourists, constitute the activities of the majority of the permanent population. Commerce of the harbor is limited to that of the commercial fishing industry and to recreational boating. A fleet of 66 commercial fishing boats and recreational craft with drafts of 2 to 8.25 feet, and about 40 miscellaneous smaller craft use the harbor regularly. About 250 transient recreational craft visit the harbor annually. The harbor is served by an improved State highway. The nearest rail connection is at Tiverton, 14.5 miles to the north.

4. Local interests request extension of the breakwater northeasterly 400 feet, removal of the rock pile inside the harbor entrance, and dredging of the harbor to a depth of 8 feet. They claim this will provide protection from north and northwesterly storms which cause extensive boat damage in the harbor; increase the available anchorage space, all of which is now occupied by local boats leaving no space for transient craft; permit expansion of the local fleet; permit winter fishing from the harbor; and provide a needed harbor of refuge. Local interests indicate that they will participate in the improvement.

5. The division engineer presents a plan for extending the breakwater 400 feet and dredging the harbor to a depth of 8 feet as sug-

gested by local interests. He estimates the cost of the improvement at $495,900 including $11,400 for navigation aids, and the annual charges at $20,635 including $1,000 for maintenance of the harbor and breakwater and $300 for maintenance of navigation aids. He finds that the improvement would prevent extensive boat damages now experienced in the harbor, provide additional needed anchorage space, permit increased fishing operations, and result in recreational boating benefits. He states that the harbor is advantageously located as a harbor of refuge, being near several fishing banks and the route between Narragansett Bay and Buzzards Bay which is extensively used by recreational craft. He estimates the annual benefits at $43,820, consisting of $3,000 for prevention of boat damages, $37,400 for transportation savings and the net value of increased sea food catch, and $3,420 for recreational boating benefits. The benefit-cost ratio is 2.12. He believes that there are sufficient local benefits to warrant a cash contribution of $18,700 by local interests. The division engineer concludes that improvement of Sakonnet Harbor is warranted and recommends modification of the existing project to provide for the plan shown in his report, provided local interests make a cash contribution of $18,700 toward the cost of construction, furnish free of cost to the United States as and when required all land, easements, and rights-of-way necessary for the initial work and subsequent maintenance, and hold and save the United States free from all damages resulting from the construction.

6. Local interests were advised of the views and recommendation of the reporting officer and were invited to submit additional information to the Board. Careful consideration has been given to the communications received.

VIEWS AND RECOMMENDATIONS OF THE BOARD OF ENGINEERS FOR RIVERS AND HARBORS

7. The Board of Engineers for Rivers and Harbors concurs generally in the views of the reporting officer. The proposed improvement would afford needed protection for the harbor as well as additional anchorage space, and would permit more efficient utilization of the existing commercial fishing fleet. The prospective benefits exceed the estimated costs.

8. The Board recommends modification of the existing project for Sakonnet Harbor, R. I., to provide for extending the breakwater northeasterly 400 feet and dredging the harbor to a depth of 8 feet, generally in accordance with the plan of the division engineer and with such modifications thereof as in the discretion of the Chief of Engineers may be advisable, at an estimated cost to the United States of $465,800 for construction and $1,000 annually for maintenance in addition to that now required, provided that local interests give assurances satisfactory to the Secretary of the Army that they will (*a*) contribute $18,700 in cash toward the cost of construction; (*b*) furnish free of cost to the United States all lands, easements, and rights-of-way, necessary for the initial work, and for subsequent maintenance when and as required; and (*c*) hold and save the United States free from damages due to construction and maintenance of the project.

For the Board:

J. S. Bragdon,
Major General, Chairman.

REPORT OF THE DIVISION ENGINEER

SYLLABUS

The division engineer finds that prospective benefits are sufficient to warrant improvement of Sakonnet Harbor, Little Compton, R. I. He recommends modification of the existing project to include a 400-foot extension, in a northeasterly direction, to the existing stone breakwater, and dredging the harbor to a depth of 8 feet below mean low water, all at a cost of $465,800 for new work, with $1,000 annually for maintenance, exclusive of aids to navigation and local cash contribution, all subject to certain conditions of local cooperation.

DEPARTMENT OF THE ARMY,
CORPS OF ENGINEERS,
NEW ENGLAND DIVISION,
Boston, Mass., September 29, 1950.

Subject: Survey (review of reports) on Sakonnet Harbor, Little Compton, R. I.

To: The Chief of Engineers, Department of the Army, Washington 25, D. C.

AUTHORITY

1. This report is submitted in compliance with the following resolution adopted April 13, 1948, by the Committee on Public Works of the House of Representatives:

Resolved by the Committee on Public Works of the House of Representatives, United States, That the Board of Engineers for Rivers and Harbors, be, and is hereby, requested to review the reports on Sakonnet Harbor, R. I., transmitted to Congress on October 15, 1941, and previous reports, with a view to determining if further improvement is advisable at this time.

A report of survey scope was authorized May 3, 1948, by the Chief of Engineers.

REPORT UNDER REVIEW

2. The report under review is an unpublished report of the Chief of Engineers dated July 22, 1941, submitted by the Secretary of War on October 15, 1941. The report covered desired improvements, consisting of a 200-foot extension of the existing breakwater, construction of a 300-foot breakwater on north side of harbor, dredging the south part of the harbor to a depth of 6 feet, and removing rocks in the center of the harbor to a depth of 8 feet. The cost of the desired improvements was proved to be excessive and not commensurate with the anticipated benefits. The report, therefore, included an alternate plan consisting of a detached breakwater 400 feet long, a 3½-acre anchorage basin 6 feet deep, and the removal of isolated rocks and boulders. Inasmuch as the benefits would be largely local, local cooperation was required to the extent of one-half of the first cost. As local cooperation could not be expected, the report recommended that no modifications of the existing project be made at that time.

DESCRIPTION

3. Sakonnet Harbor, originally known as Church Cove, is about three-quarters of a mile north of Sakonnet Point in the southwestern part of the town of Little Compton, Newport County, R. I. It lies on the east side of the entrance to Sakonnet River which separates Aquidneck Island from the mainland. By water, the harbor is about

15 miles east of Newport Harbor, about 12 miles southwest of the mouth of Westport Harbor, and about 28 miles southwest of New Bedford Harbor. Straight-line distances to these harbors are about one-half of the water distances.

4. The harbor is roughly rectangular in shape, and is about 900 feet wide and 1,200 feet long. It is a shallow, rock-bound cove which is open on the north, protected on the east and south by the mainland, and protected to a small extent on the west by a rock point which has been extended northerly by a breakwater. In the inner half of the harbor the depths vary from 2 to 8 feet, and in the outer and less protected half of the harbor the depths vary from 8 to 20 feet.

5. The mean tidal range is 3.3 feet and the spring range is 4.1. Ranges of 6 feet and higher have been observed at times as the result of the combined effects of wind and tide. During the hurricane of September 21, 1938, high water on the bluff at Sakonnet Point was 19.8 feet above mean low water. The locality is shown on United States Coast and Geodetic Survey charts Nos. 353 and 1210 and on the map accompanying this report.

TRIBUTARY AREA

6. The area tributary to the harbor is limited in extent. The town of Little Compton, the business and residential center of which is about 4 miles from Sakonnet Harbor, has a population of about 1,500 supplemented by a considerable number of summer residents. Between the village center and the harbor, there are numerous summer estates which are generally concentrated in the vicinity of the harbor. The families in the vicinity of the harbor are supported by fishing and lobstering, which with farming and catering to the summer tourists constitute the activities of the majority of the permanent residents.

7. There are no industrial establishments, large businesses, or major trade facilities in the area. However, they are located in Fall River, Mass., 20 miles to the north. An improved State highway connects the harbor with a network of highways to the north and east. No water or rail transportation lines serve the harbor. The nearest railroad facilities are at Tiverton, R. I., about 14.5 miles to the north.

BRIDGES

8. There are no bridges crossing the locality under consideration.

PRIOR REPORTS

9. Sakonnet Harbor has been the subject of several previous reports. Pertinent data with reference to these reports are embodied in the following tabulation:

Published in—	Nature of report	Work considered and recommendation
H. Doc. No. 154, 20th Cong., 1st sess., 1828.	Survey and examination.	Breakwater 400 feet long. Favorable.
Annual report Chief of Engineers, 1889.	Preliminary examination.	Restoration of a portion of breakwater that had been previously built, and dredging of a small area of the cove for increased anchorage. Favorable.
Annual report Chief of Engineers, 1895.	do	Raising and lengthening breakwater and marking or removing isolated rocks in harbor. Survey recommended.
H. Doc. No. 81, 55th Cong., 1st sess., 1897.	Survey	Extending the old breakwater northerly to a rock (about 200 feet) and raising the whole structure to 8 feet above mean low water with a top width of 15 feet. Favorable.
H. Doc. No. 99, 56th Cong., 2d sess., 1900.	Preliminary examination and survey.	Removal of large rock nearest the wharf to a depth of 8 feet. Favorable.
H. Doc. No. 264, 62d Cong., 2d sess., 1910.	Preliminary examination.	Dredging to a depth of 12 feet at mean low water an area 150 to 200 feet wide just east of the breakwater. Removal to a depth of 12 feet the rock removed to a lesser depth under the earlier project and further extension of existing breakwater. Unfavorable.
Unpublished report of the Chief of Engineers, 1928.	do	3 plans for creation of harbor of refuge by extending existing breakwater and constructing either a detached breakwater or 2 detached breakwaters. Unfavorable.
Unpublished report of the Chief of Engineers, 1941.	Preliminary examination and survey.	A desired plan comprising (*a*) a 200-foot extension to existing breakwater; (*b*) a 300-foot detached breakwater; (*c*) a 6-foot anchorage; (*d*) removal of ledge rock to 8 feet; and (*e*) removal of isolated rocks to 8 feet, and an alternate plan comprising a 400-foot detached breakwater and items (*c*) and (*e*) above. Unfavorable.

EXISTING CORPS OF ENGINEERS PROJECT

10. The existing project for the improvement of Sakonnet Harbor was authorized by the following river and harbor acts:

Acts of—	Work authorized	Documents
July 4, 1836	Breakwater	H. Doc. No. 154, 20th Cong., 1st sess.
Mar. 3, 1899	Extending old breakwater and raising it to 8 feet above mean low water, top width of 15 feet.	H. Doc. No. 81, 55th Cong., 1st sess., and Annual Report, 1897, p. 934.
Mar. 2, 1907	Removal of rock nearest the breakwater to 8 feet at mean low water.	H. Doc. No. 99, 56th Cong., 2d sess., and Annual Report, 1901, p. 1148.

11. The existing project provides for a breakwater 400 feet long, 15 feet wide at the top at an elevation of 8 feet above mean low water, with side slopes of 1 on 1 on the harbor side and 1 on 2 on the seaward side, and for the removal of the rock nearest the breakwater to a depth of 8 feet at mean low water. The breakwater was completed in July 1900 and the rock removed in July 1908. On June 30, 1950, the cost for new work under the existing project was $62,202.50, and for maintenance $10,295.97, for a total cost of permanent work $72,498.47. There is no approved estimate of the annual cost of maintenance.

LOCAL COOPERATION ON EXISTING PROJECT

12. Conditions requiring local cooperation have not been prescribed by law.

TERMINAL AND TRANSFER FACILITIES

13. There are four wharves in the harbor, none of which are publicly owned. The Sakonnet Yacht Club pier, on the east side of the harbor, projects about 300 feet from the shore and has a float which makes it readily accessible to small craft. The three other wharves are located on the west side of the harbor, in the lee of the breakwater. These wharves, for practical purposes, form one structure about 150 feet wide with two piers, 30 and 40 feet wide, projecting 35 and 70 feet therefrom. The piers are open to the public free of charge for taking on supplies, gasoline, and water, and for making shore contacts. The wharf is in constant use by local and transient vessels. The State highway located along two sides of the harbor provides access to all wharves.

14. There are no boatbuilding or repair yards, or marine railways, at the harbor. There is one open-air boat storage yard at the south end of the harbor. There is sufficient undeveloped waterfront area available for expansion of facilities for commercial and recreational boats.

IMPROVEMENTS DESIRED

15. In order to obtain the views of interested parties concerning the improvements desired for the development of Sakonnet Harbor, a public hearing was held in Little Compton, R. I. on August 4, 1949. The hearing was attended by interested parties representing the local and State governments, the fishing industry, yacht clubs, and other business interests.

16. The improvements desired by local interests are: An extension to the existing breakwater of about 400 feet in a northeasterly direction, the dredging of the harbor, and the removal of the rock pile just east of the existing breakwater.

17. Proponents in discussing the need of dredging, indicated that 8 feet at mean low water was desired. While no definite limits for the desired dredging were presented, proponents indicated that dredging was particularly needed in the southern part of the harbor and also between the wharves and the breakwater. Included in the requested dredging was the removal of the rock pile located in the center of the harbor, just east of the breakwater.

18. Most of the 36 exhibits submitted at the hearing favor the 400-foot extension of the breakwater. Only two of these indicate any opinion that the present height of the breakwater is inadequate. These two exhibits, presented by one individual representing a wholesale fishing company and a fish processing plant, proposed increasing the height of the breakwater by 6 feet.

19. The extension of the existing breakwater, the dredging of the harbor, and the removal of the rock pile are desired to provide additional protection and increased anchorage for local and transient fishing boats and pleasure craft, to improve navigation in the harbor, and to provide a harbor of refuge. The principal reasons advanced by the proponents are summarized as follows: (*a*) There is very limited storm protection afforded from the north and northwest quadrants, which

results in considerable damage being experienced by most craft and such damage could be prevented by adequate protection; (*b*) there is insufficient anchorage area available in the harbor and the available anchorage is completely occupied leaving no room for transient vessels; (*c*) the pile of rock and ledge just east of the existing breakwater is a menace to navigation; (*d*) with the exception of Westport, Mass., which is difficult to enter, Sakonnet Harbor is the only harbor between Newport, R. I., and New Bedford and South Dartmouth, Mass.; (*e*) Sakonnet is ideal as a harbor of refuge for fishing boats off Sakonnet Point, and pleasure craft cruising between Newport, R. I., and New Bedford, Mass.; (*f*) large boats have to anchor in the unprotected area of the harbor, where they are exposed to northerly winds and a surge which at times makes living on such boats very uncomfortable; (*g*) the enlarged and better anchorage will attract more fishing boats and pleasure craft into the harbor, thereby increasing its prosperity; (*h*) the fishing boats will be able to fish in safety throughout the winter months.

COMMERCE

20. The commerce in Sakonnet Harbor pertains entirely to the receipt of fish and lobsters. No records have been kept giving the amount of these receipts. However, the Little Compton Harbor Committee estimates that the annual landings at Sakonnet Harbor amount to 5,240,000 pounds of fish, and 230,000 pounds of lobsters. This estimate appears reasonable on the basis of the average annual catches of the boats operating from Sakonnet Harbor.

VESSEL TRAFFIC

21. Records have not been kept of the vessel traffic in Sakonnet Harbor. A fishing fleet comprising 25 vessels operates from the harbor, These vessels are 20 to 40 feet in length, and have beams generally 6 to 12 feet and drafts of 4 to 6 feet. The recreational fleet based in the harbor consists of 41 boats, comprising 7 cruisers from 22 to 46 feet in length, and drawing 2 to 6 feet; 6 auxiliary sailboats from 20 to 60 feet in length, and drawing from 4½ to 8¼ feet; and 28 sailboats from 13 to 18½ feet long, and drawing 2 to 4 feet. In addition there are 40 miscellaneous small boats in the harbor. About 250 transient pleasure craft annually visit the harbor. These are generally less than 50 feet in length and draw from 7 to 8 feet. Occasionally a 75-foot yacht drawing 9 feet calls at this harbor.

DIFFICULTIES ATTENDING NAVIGATION

22. The harbor is directly exposed to the north, and the existing breakwater does not afford sufficient protection from storms, particularly those from the north and northwest. The anchorage area is completely occupied and additional boats cannot be accommodated. Waves generated by strong southerly winds cause action within the harbor which pitches craft around their moorings and against the wharves. This action takes place when waves roll up the river from the ocean and refract to roll southerly within the harbor. A pile of rocks placed in the center of the harbor during a previous dredging operation constitutes a menace to navigation in the harbor. There is no adequate place of refuge for small vessels navigating adjacent

waters between Newport, R. I., and Westport, Mass. Ground swells break over the entrance channel to Westport Harbor, making that harbor hazardous to enter.

WATER POWER AND OTHER SPECIAL SUBJECTS

23. The waterway is tidal. Matters of water power or flood control are not pertinent to this report. None of the work contemplated would have an adverse effect on wildlife or shellfish.

PLAN OF IMPROVEMENT

24. The plan of improvement considered in this report is the one desired by the local interests. The plan is based upon the results of hydrographic and probing surveys made in August 1939 and November 1949. The plan of improvement comprises, extending the existing breakwater 400 feet in a northeasterly direction with a top width of 15 feet at a height of 8 feet above mean low water with side slopes of 1 on 1 on the harbor side, and 1 on 2 on the seaward side, and dredging the harbor to a depth of 8 feet below mean low water, including the removal of rock pile in the center of the harbor.

25. The height of 8 feet above mean low water for the extension to the breakwater was selected on the basis that such a height had proven satisfactory for the existing structure. With only one exception, local proponents for the extension did not indicate a desire for a greater height. This elevation is 5 feet above mean high water and about 3.5 feet above the highest water predicted for this harbor. It is considered that such a height will provide adequate protection during ordinary storms. The depth of the anchorage area, 8 feet below mean low water,was selected as the depth necessary to accommodate the majority of the vessels that will use the harbor.

AIDS TO NAVIGATION

26. The United States Coast Guard has been consulted on the matter of aids to navigation and has advised it will be necessary to relocate and replace the present light and structure with a new 18-foot standard steel tower with a fixed flasher light, and that such work will cost $11,400, and $300 for annual maintenance.

SHORE LINE CHANGES

27. The existing breakwater has had no known adverse effect upon adjacent shore lines. The extension of the existing breakwater in a northeasterly direction will afford the harbor greater protection from northerly storms. The configuration of the adjacent coast is such that it will not be affected by the breakwater. The dredging of the harbor will have no effect on adjacent shore lines.

ESTIMATE OF FIRST COST

28. Quantities estimated for dredging are for materials in place with an allowance for 2-foot overdepth. The unit price for dredging is estimated for the material being removed by dipper dredge methods and dumped at sea. Quantities for the breakwater extension are based upon a 1-foot settlement. Unit prices include allowance for

engineering and overhead. The cost of aids to navigation were furnished by the United States Coast Guard. The estimate of first cost of improvement is as follows:

(*a*) Construction:		
(1) Dredging:		
8 feet deep at mean low water, 43,000 cubic yards of hard-packed sand and gravel at $1.50	$64,500	
8 feet deep at mean low water, 6,000 cubic yards of ledge at $30	180,000	
Total cost of dredging		$244,500
(2) Construction of breakwater extension: 30,000 tons of stone at $8	$240,000	
Total cost of breakwater		240,000
Total cost of construction		484,500
(*b*) Aids to navigation: Installing steel tower and fixed light on breakwater extension	11,400	
Total cost of aids to navigation		11,400
Total project cost		495,900

ESTIMATES OF ANNUAL CHARGES

29. The estimated annual charges have been computed on an assumed life of 50 years for the improvement, and on the assumption that local interests will contribute in cash $18,700 toward the construction cost in accordance with paragraph 50. Interest rates of 3 percent for Federal investment, and 3.5 percent for the non-Federal investment have been used.

Investment

Federal investment:		
Construction costs, Corps of Engineers	$465,800	
Aids to navigation, U. S. Coast Guard	11,400	
Total Federal investment		$477,200
Non-Federal investment: Construction costs, local interests	$18,700	
Total non-Federal investment		18,700
Total investment		495,900

Estimated annual charges

Federal annual carrying charges, Corps of Engineers:	
Interest on investment	$13,970
Amortization of investment	4,130
Maintenance	1,000
Total	19,100
Coast Guard:	
Interest on investment	340
Amortization of investment	100
Maintenance	300
Total	740
Total Federal annual carrying charges	19,840
Non-Federal annual carrying charges:	
Interest on investment	650
Amortization of investment	145
Total non-Federal annual carrying charges	795
Total annual carrying charges	20,635

ESTIMATES OF BENEFITS

30. The plan of improvement was designed to provide additional protection from storms and waves coming in from the north and northwest quadrants, and to provide additional anchorage area. The benefits to be derived from the proposed improvement will accrue from increases in the fishing industry and the recreational boating activities, and the reduction in boat damage from storms.

31. The extension of the existing breakwater for a distance of 400 feet will provide additional storm protection to the harbor in which extensive damage has been suffered by fishing and recreational craft. The local harbor committee submitted a tabulation of damages which occurred during the period 1938 to 1949. The most damaging storms occurred in the years 1938, 1944, and 1947. The local authorities believe that breakwater protection would have eliminated $96,000 worth of the boat damage that was incurred during the southeast hurricane of September 21, 1938. The high water profile for this storm shows that the water reached a maximum elevation of 19.8 feet above mean low water at Sakonnet Harbor. It is inconceivable that the proposed extension of breakwater would have eliminated any of the damage incurred, since a storm of such magnitude would have completely submerged the proposed extension under about 12 feet of water, as was the existing breakwater and much of the adjacent land. Therefore, damages incurred during the hurricane have not been considered in computing benefits to be derived through elimination of boat damages.

32. The hurricane of September 14 and 15, 1944, came in from the southeast. Ocean waves coming up the river under strong wind conditions roll northerly up the river, parallel with the existing breakwater and cause wave motion in the opposite direction inside the harbor. This wave action is such that boats drag their anchors and are washed ashore, and those moored along the wharves are buffeted against the structures. It is believed that the extension of the breakwater at an angle to the existing structure, will alter the direction of the wave action within the harbor and cause most of the waves to be expended along the inner side of the breakwater. Local interests report that two boats were lost and several boats were damaged during the hurricane, and that had the harbor been properly protected this damage would not have occurred. During the hurricane the water reached a height of about 6.4 feet above mean low water in New Bedford, which is indicative of the height that was reached at Sakonnet. Water at this height would not have topped the breakwater extension. In consideration of the water heights reached during the storm and of the anticipated effect that the proposed breakwater extension will have on wave action on the harbor, the claim that an extension to the breakwater would have eliminated $13,000 worth of damage is considered reasonable.

33. The third large storm during the period was a northwest storm on November 12 and 13, 1947. During the storm, eight vessels were destroyed or damaged, and one 75-foot lighter was also damaged. The extent of damages to boats, $20,800, as claimed by local interests is considered reasonable, while the claimed damage of $30,000 to the lighter which sank in shallow water after dragging its anchor and hitting a rock, is considered high. It is believed the damage to the lighter was about $10,000.

34. For the other years between 1938 and 1949, vessel damage and expense attributed to the lack of better breakwater protection generally consisted of refloating grounded boats and repair of minor damages incurred during the groundings. Monetary estimates of the extent of damages are not available except for 1949. In addition to damage to vessels, considerable damage has also occurred to fishing and lobster gear and to shore installations. The total damage to vessels which may be ascribed to lack of breakwater protection is as follows:

Period:	*Vessel damage*
1939 to 1943, inclusive	Minor
1944	$13,000
1945 and 1946	Minor
1947	30,800
1948	None
1949	1,000
Total	44,800

The damage loss of $44,800 appears to be reasonable for the period of 1939 to 1949, inclusive, which is equivalent to an annual loss of about $4,000 per year. After the extension of the breakwater, it is anticipated that the major part of vessel damage now experienced will be eliminated with a resultant annual saving of $3,000. This saving is a general benefit. A local benefit will also be derived from the improvement of the breakwater in savings of damage to wharves, and fishing gear.

35. In April 1950, the local harbor committee advised that it anticipated increased use of the harbor, as discussed below, by both fishing boats and pleasure craft because of the increased anchorage and greater protection to be provided under the plan of improvement. Ten draggers of the local fleet would be able to fish through the winter and increase its annual fish landings by 3 million pounds. The transferring of 10 vessels from other ports would further increase the annual fish landings by 3 million pounds. Six to eight new boats would be constructed and added to the home fleet. The annual fish landings of these boats would be approximately 2 million pounds. Between 3 and 6 million pounds of additional landings would be made by outside fishermen, which is approximately equal to the annual landings of 15 vessels. The home fleet of recreational craft would be increased by two cruisers 60 feet long, by 10 sailboats 25 to 50 feet in length which would be transferred from other ports, and by 20 sailboats 8 to 15 feet in length and 10 sailboats 15 to 25 feet in length which would be built new. This estimate of increased fish landings of 11 to 14 million pounds of fish annually appears to be overoptimistic in view of the present landings of about 5.5 million pounds by the existing fleet.

36. Information furnished at the public hearing, August 1949, shows that local interests at that time anticipated a combined landing of fish by the expanded local fleet and by outside fishermen, subsequent to the improvement, would exceed 7 million pounds annually. It is believed that this estimate of increased catch is more realistic and is in line with the related features of the harbor.

37. At the present time the local fleet cannot fish during the winter months because of the lack of adequate protected anchorage. It is estimated that draggers, 32 to 40 feet in length, fishing throughout the

entire year catch about 300,000 pounds annually. Monthly landings in New Bedford, Mass., indicate that only about 25 percent of that port's catch is landed in the winter. In view of this, it is estimated that the increased catch of the 10 draggers of the local fleet which would operate during the winter months would amount to about 750,000 pounds. Local authorities have claimed about 10 vessels would be transferred to the harbor from less favorable locations, and six to eight new vessels would be constructed. In general, boats owned by other than local residents would not be transferred to a harbor for a permanent base, the transfers being made for temporary periods of favorable fishing in adjacent waters. Local owners would transfer for reasons of convenience. Such transfers ordinarily would not appreciably add to the total catch of fish for the Nation as a whole. At Sakonnet, however, temporary transfers from Portsmouth and Tiverton would enable fishermen to operate throughout the winter. At present such fishermen are unable to fish during the winter because the 2 to 3 hours required to run the additional distance up the river and the wintertime hazards off of Sakonnet Point do not allow sufficient daylight time to run to the fishing grounds and back. Winter fishing would increase the annual catch of these fishermen by about 25 percent. Some new craft would undoubtedly be added to the Sakonnet fleet. It is reasonable, in view of the general interest of the fishing industry in the Sakonnet improvement, to believe that new boats and boats transferred to the harbor for winter fishing would produce additional landings at Sakonnet equivalent to that of five vessels, which is about 1.5 million pounds. The total increase in landings because of winter fishing and new boats added to the home fleet would then be about 2.25 million pounds.

38. On the basis of annual fish landings at New Bedford Harbor, Mass., the average annual price per pound paid for fish, and the cost of financing, operating, and maintaining fishing vessels operating from that port, it has been determined that the net value of fish is 1.65 cents per pound. It is considered that the net value of fish landed at Sakonnet is equal to that landed at New Bedford. The net value of the anticipated increased landings at Sakonnet Harbor is $2,250,000 \times \$0.0165 = \$37.125$. The net value of the increased landings of fish is a general benefit.

39. While the local estimate that 15 additional outside boats would land fish at Sakonnet appears to be optimistic, some additional landings would be made. There are several good fishing banks off Sakonnet Point. A memorandum by the Little Compton Harbor Committee, submitted in support of proposed improvement when the study was initiated, contains letters and petitions signed by some 60 parties who indicate a desire to make landings at Sakonnet. It appears reasonable that landings by outside fishermen because of the improvement would equal that of five additional vessels, or about 1.5 million pounds. These landings would result from convenience in disposing of catch at a port near the fishing grounds, and in time savings to fishermen in returning to the fishing grounds or their home port. The nearness of a port to fishing grounds is important to vessels which carry limited quantities of ice for protecting their catch. Landings would also result from the relationship of prices paid at several ports as opposed to transportation charges to processing plants and distribution centers. The trucking charge from Sakonnet

Harbor to Tiverton, which is one of the nearer distribution centers and is reached by boat only by passing Sakonnet Harbor, is $1.50 per ton. For a vessel to travel to Tiverton by water would require 2 to 3 hours to make the round trip. To transport 1.5 million pounds of fish in the individual fishing vessels would require about 200 vessel trips at an operational cost of $3.50 per hour, exclusive of wages. The minimum general benefit that would be derived from the saving in time and operational costs of outside boats making landings at Sakonnet Harbor, would be as follows:

200 trips times 2 hours times $3.50 per hour	$1, 400
750 tons times $1.50 per ton	1, 125
Net saving, general benefit	275

40. Lobstering amounts to 4 percent of the present annual landings at Sakonnet. Local interests indicated that the added protection of the harbor would serve this segment of the fishing industry by affording a greater degree of safety for its vessels, and for pots and gear stored along the shore. However, no claim was made that any appreciable expansion of the industry would result from the improvement. This is probably partly due to the fact that lobstering is generally carried on in conjunction with other fishing activities, with the boats being employed for several purposes. Hence, no benefit is evaluated for expansion of lobstering.

41. The existing pleasure-boat fleet includes cruisers, sloops, yawls, schooners, sailboats, and various miscellaneous craft such as skiffs and tenders. Based on values of comparative boats, the present-day new values vary from $800 for the small sailboats to $75,000 for a schooner. The following list classifies these boats by principal types and presents valuations based upon the value of the individual boats considered.

Craft	Length	Number	Present-day value	
			New	Depreciated (average)
Cruisers	22 to 46 feet	7	$91, 000	$45, 500
Auxiliary sailboats	20 to 60 feet	6	127, 000	63, 500
Sailboats	12 to 19 feet	28	22, 400	11, 200
Miscellaneous		40	7, 600	3, 800
Total		81	248, 000	124, 000

42. Investigation of rental charges for recreational boats and the cost of maintaining such craft indicates that if the existing pleasure boat fleet in Sakonnet Harbor, which would be affected by the improvement, was operated on a for-hire basis the following net return could be reasonably anticipated on the current investment in the fleet as represented by the average depreciated value.

Craft:	*Net return*
Cruisers	$4, 100
Auxiliary sailboats	5, 700
Sailboats	1, 300
Total	11, 100

Thus the total benefit which can accrue to the existing fleet is $11,100. The fleet presently realizes this benefit except for the losses it incurs through storm damages. The extent of these damages has been included in the $3,000 annual benefit evaluated for elimination of damages to both fishing and pleasure craft.

43. The local harbor committee has stated that it knows of at least two 60-foot cruisers valued in excess of $75,000 each which will transfer to the harbor and, on the basis of statements by Little Compton residents, it conservatively estimates 10 sailboats varying from 25 to 50 feet in length and having an average valuation of $5,000 will be transferred to the harbor. These vessels are presently kept at South Dartmouth, Westport, and other locations within 10 to 15 miles of Sakonnet Harbor. These transfers would be made for reasons of convenience to the local owners and improvement over access and mooring conditions at other harbors. In view of the number of summer residences in the area, these transfers may be reasonably anticipated. The value of these vessels is as follows:

Craft	Length	Number	Present-day value	
			New	Depreciated (average)
Cruisers	60 feet	2	$150,000	$75,000
Sailboats	25 to 50 feet	10	50,000	25,000
Total		12	200,000	100,000

It is estimated that the owners of craft to be transferred from other ports presently enjoy only 90 percent of the possible recreational benefits. This is based on the condition that at the present time, with craft based in other ports at a distance of 10 to 15 miles distant, owners necessarily incur increased travel cost and time. The additional time of travel undoubtedly prevents the owners from taking advantage of opportunities to make numerous cruises of short periods of time. The transfer of such craft to Sakonnet Harbor will result in the owners enjoying the full benefit of their boats. The total benefit may be evaluated as the net return which could be realized on these craft if they were operated as for-hire vessels. The total net return is:

Craft:	*Net return*
Cruisers	6,800
Sailboats	$3,000
Total	9,800

The benefit to be realized from the transfer is 10 percent of the total benefit or $980.

44. Local interests have estimated that 30 new sailboats will be added to the recreational fleet, two-thirds of which would be in the small class of 8 to 15 feet in length. This is based upon the fact that the improved and protected harbor will allow smaller boats to use it and that summer vacationists will provide such boats for their children. Their estimates, in view of the expanding recreational boating activity, appears reasonable. The estimated additions and their valuations based upon average value of the classes of boats are:

Craft	Length	Number	Present-day value	
			New	Depreciated (average)
Sailboats	8 to 15 feet	20	$16,000	$8,000
	15 to 25 feet	10	15,000	7,500
Total		30	31,000	15,500

These boats would realize the entire benefit possible from such craft. The net return to be realized on these craft, if they were operated on a for-hire basis, is:

Craft: Sailboats, net return $1,860

The benefit, evaluated as the possible net return, is $1,860.

45. On the average there are four to five transient vessels in the harbor each day. On the basis of the reported 250 transient craft visiting the harbor each season, it appears that each vessel must spend an average of 2 days at the harbor. These craft are generally under 50 feet in length and draw from 7 to 8 feet of water. Since these boats are equivalent to the addition of four to five boats to the existing home fleet, they will experience no additional benefit through the improvement of the harbor. In view of the interest in this harbor shown by the yacht clubs of the area, and the desire for a harbor of refuge for small craft in the area, it is considered that an average of two additional transient vessels will call at the port each day for periods varying from a few hours to several days each. This transient use is equal to one additional vessel in the home fleet, such vessel being of the cruiser or auxiliary sailboat type which are of the same average value. The benefit to be realized by the vessel is equal to the possible net return to be derived by the addition to the local fleet of one cruiser of the class presently using the harbor.

Craft	Length	Present-day value		Net return
		New	Depreciated (average)	
Cruiser	22 to 50 feet	$13,000	$6,500	$580

The benefit from additional transient craft is thus $580.

46. In addition, general navigation will benefit from the use of the harbor as a place of refuge. Such a benefit is not susceptible to monetary evaluation.

47. Benefits accruing to the fishing industry are considered to be of general benefit to the country as a whole. Likewise benefits resulting from the reduction of storm damage to vessels, both commercial and recreational, are considered to be general. Benefits resulting from recreational boating activities are considered to accrue equally to the general public and to local interests. The evaluated benefits are thus summarized and assigned as follows:

Type	Total	General	Local
Elimination of vessel damage, fishing and recreational craft	$3,000	$3,000	
Increased benefits to local fishing fleet, winter fishing and new boats	37,125	37,125	
Increased benefits to outside fishing vessels, savings in transportation costs	275	275	
Increased benefits to local recreation fleet:			
Transferred boats	980	490	$490
New boats	1,860	930	930
Transient boats	580	290	290
Total benefits	43,820	42,110	1,710

COMPARISON OF BENEFITS AND COSTS

48. For the improvement of Sakonnet Harbor, the evaluated annual benefits of $43,820 and the estimated annual charges of $20,635 result in a ratio of benefits to cost of 2.12 to 1.0.

ALLOCATION OF COST

49. Local interests should bear a portion of the cost of the improvement commensurate with the local benefits realized from the improvement. The allocation of costs between the United States and local interests is therefore made on the basis of relative benefits applied to the annual carrying charges, exclusive of aids to navigation which are considered to be wholly a Federal responsibility. The allocation of cost is as follows:

Evaluated benefits

Type	Amount	Percent total
General	$42,110	96
Local	1,710	4
Total	43,820	100

Annual charges

Agency	Amount	Percent total
Corps of Engineers	$19,100	96
Local interests	795	4
Total	19,895	100

The annual charge applicable to local interests on the basis of a 50-year life for the project and an interest rate of 3.5 percent represents an initial investment of $18,700.

PROPOSED LOCAL COOPERATION

50. The allocation of cost between the United States and local interests, as based on the relative benefits applied to the annual charges, exclusive of aids to navigation, requires that local interests should contribute $18,700 toward the cost of construction. In addition to making a cash contribution, local interests should be required to furnish all land, easements, and rights-of-way necessary for the

accomplishment and maintenance of the improvement, and to hold and save the United States free from damages which result from the project.

COORDINATION WITH OTHER AGENCIES

51. All Federal, State, and local agencies having interests in the development and use of the waterway were notified of the hearing held August 4, 1949, to obtain the views of the local interests concerning the improvements desired. Subsequent discussions were held with State and local officials and other local interests concerning the desired improvements. The results of this study were discussed with representatives of the Little Compton Harbor Committee, and the harbors and rivers division of the Rhode Island Public Works Department. These representatives were in accord with the recommendations made in this report.

DISCUSSION

52. Sakonnet Harbor is located about three quarters of a mile north of Sakonnet Point in the southwestern part of the town of Little Compton, R. I. The economy of the residents in the vicinity of the harbor is based on the fishing industry, farming, and catering to the summer tourists. There is a fleet of 25 fishing vessels that use the harbor as its home port. The harbor is also used during the summer months by a considerable number of pleasure craft.

53. The configuration of Sakonnet River immediately above the harbor is such that the east shore extends almost due north for about 1.5 miles, and then swings northwest to Church Point, which is about 2,000 feet west of the harbor. Thus the nearest land north of the entrance of the harbor to break northerly winds is about 1.5 miles away. To the northwest the nearest land is Acquidneck Island which is across the river and about 3 miles away. Thus the harbor is exposed to storms from the north and northwest, with the greatest exposure being from the northwest. Inspection of the wind diagram for Block Island, which is indicative of the winds affecting Sakonnet, shows that the dominant storm winds blow from the northwest and the greatest average velocities are from the west, northwest, and northeast. Only a small amount of the storms are from the north. In duration of time, winds from the southwest, west, and northwest predominate. It is evident that the northwest exposure creates the serious anchorage problems claimed by local interests. The shape of Sakonnet Harbor, with the existing breakwater extending northerly is such that direct attack by southerly winds or waves cannot be experienced. However, during the infrequent southerly storms, waves moving north along the outside of the breakwater create wave action in the opposite direction within the harbor which causes boats to swing in all directions and to drag anchors. These forces have caused extensive damages to vessels moored in the harbor, amounting to about $4,000 annually between 1939 and 1949.

54. The present anchorage area within the 3-foot contour, and a line about east by south from the tip of the breakwater is about 5 acres. The area will just about accommodate the 25 fishing vessels and 41 pleasure craft which presently make the harbor its home port. Transient vessels can be accommodated by moorings released by

home fleet boats being absent or tied to the wharves. There is no room for additional boats to base in this harbor. However, only about 1.8 acres of this anchorage is protected from the dominant northwest winds. Navigation in this harbor, and the anchorage of boats is made more hazardous by rocks which were placed on a ledge in the center of the harbor.

55. The proposed plan of improvement considered in the report is the one desired by local interests, and comprises a 400-foot extension to the existing breakwater in a northeasterly direction at its present elevation of 8 feet above mean low water, and the dredging of the harbor to a depth of 8 feet below mean low water, including the removal of the rock pile.

56. The proposed harbor improvement will provide additional mooring area of about 5.8 acres, making a total anchorage of 10.8 acres. The entire anchorage will be protected from the dominant northwest storms in lieu of the present 1.8 acres. The northeasterly direction of the breakwater extension will serve to reduce the width of the harbor entrance and afford some increase in the protection from northerly winds. It is also anticipated that the direction of the extension will reduce the wave activity induced by strong southerly winds. The 8-foot depth of the harbor will provide anchorage for all classes of vessels which desire to use it and allow safe maneuvering within its limits. While proponents claimed that the harbor required dredging because of shoaling in past years, comparison of the 1949 survey with previous surveys failed to show any appreciable shoaling has occurred. The harbor will provide mooring space for approximately 115 boats, accommodating the anticipated increases in the recreational and fishing fleets, and allowing for reasonable use by transient vessels.

57. Proponents for the improvement claimed that there was a need to use Sakonnet as a harbor of refuge, but because of its inadequate protection from storms and lack of anchorage, such use was limited and not always possible. Most boats do not attempt to seek refuge there. Sakonnet Harbor has a definite advantage as a harbor of refuge. Besides being near to several fishing banks, it is very close to the run between Narragansett Bay and Buzzards Bay, and adjacent waters are extensively used for pleasure boating. This section is noted for the frequency of thick weather. The only other harbor between Newport, R. I., and New Bedford and South Dartmouth, Mass., a distance by water of about 39 miles, is Westport Harbor, which is difficult to enter. It is to be expected that Sakonnet Harbor will be more extensively used as a harbor of refuge after improvement.

58. Proponents claimed fish landings at Sakonnet Harbor would increase after the improvements because draggers would be able to fish through the winter months instead of lying idle, new boats would be added to the fleet because of transfers from other harbors and new construction of vessels, and because more outside vessels would land their catches at Sakonnet. It was contended that fishing was not possible after October. Analysis of monthly wind movements and directions indicates that the dominant and damaging northwest winds prevail throughout the winter months. The protection afforded by the proposed breakwater extension would allow fishing through the winter. Because of this protection, boats from Portsmouth and Tiverton which now cannot reach the fishing grounds during the

winter could base at Sakonnet for those months and fish throughout the entire year. It is considered that new boats added to the fleet and winter fishing would increase the annual catch landed at Sakonnet Harbor by 2.25 million pounds, having a net value of $37,125. The improvement of the harbor would also result in additional landings being made at the harbor by outside fishermen. By landing at Sakonnet and shipping the fish by truck to Tiverton, vessels can save 2 hours' sailing time up Sakonnet River. On the estimated landings of five additional outside fishermen, the net increase in the value of the catch would be the annual savings in transportation, or $275. It is not considered that the improvement would result in any appreciable benefit to the lobster industry.

59. The home fleet of 41 recreational craft will be increased by an estimated 12 transfer boats consisting of 2 cruisers, 60 feet in length, and 10 sailboats with lengths of from 25 to 50 feet. These boats have been moored elsewhere due to the existing harbor conditions. It is estimated that a total of 30 newly built sailboats ranging from 8 to 25 feet in length will be added to the recreational fleet on the completion of the improvements. The existing recreational fleet will receive no other benefit from the improvement except reduction of damages resulting from storm attack on the harbor. The owners of boats transferred from other harbors will be able to use their craft more often, particularly for short periods, because of the accessibility of their boats to their residences. It is considered that owners of such craft now only receive 90 percent of the possible benefits to be derived from their craft, and will receive the full benefit after their transfer to Sakonnet Harbor. Because the new boats will be based in an adequate and protected harbor, it is considered that owners of such craft will receive full benefit from their boats. The total benefit to be derived from recreational craft, exclusive of elimination of storm damage, is estimated at $3,420.

60. It is considered that the breakwater extension will eliminate the greater part of damage now sustained by vessels in the harbor because of wave attack. It is estimated that the savings through reduction of damages will amount to $3,000 annually.

61. The total benefits to be derived from the project amount to $43,820, of which $1,710 is considered to be local in character and $42,110 to be general in character. The total cost of the work, including aids to navigation, is estimated to be $495,900 with $1,300 annually for maintenance. The benefit-cost ratio of 2.12 indicates the work is justified.

62. It is considered that local interests should contribute toward the construction of the improvement proportionate with the local benefits to be realized from the improvements. The local harbor committee has indicated that the town may be expected to make an appropriation to meet the requirements of a local cash contribution. The State of Rhode Island has participated in meeting requirements of local cash contribution for the improvement of other harbors. State officials have indicated that it is reasonable to expect that the State will likewise participate in the improvement of Sakonnet Harbor.

63. It has been indicated that fish shipping interests will enlarge their fish handling facilities in order to facilitate the handling of the increased catch. Local interests also have signified their intent to build a boat yard with a marine railway.

CONCLUSION

64. The improvement of Sakonnet Harbor is warranted to provide added protection and additional anchorage area in the harbor.

65. The improvement, comprising a 400-foot northeasterly breakwater extension and the dredging of the harbor, including the removal of the pile of stone in the center of the harbor, to a depth of 8 feet at mean low water can be completed at an estimated cost of $484,500 for new work plus $11,400 for aids to navigation. The ratio of 2.12 to 1.0 for evaluated benefits to annual carrying charges indicates that the project is economically injustified.

66. A local cash contribution of $18,700 toward the cost of construction is considered reasonable in view of the extent of local benefits to be derived from the project. The share of the cost to be borne by the United States for construction by the Corps of Engineers is $465,800. If the project is authorized, funds for the entire project should be appropriated in one fiscal year to assure economical prosecution of the work.

RECOMMENDATION

67. It is recommended that the United States modify the existing project for Sakonnet Harbor to include:

(*a*) A 400-foot extension in a northeasterly direction to the existing stone breakwater at its present elevation of 8 feet above mean low water and top width of 15 feet, with side slopes of 1 on 2 on the seaward side and 1 on 1 on the harbor side; and

(*b*) The dredging of the harbor to a depth of 8 feet below mean low water;

all as generally shown on plate 1, at an estimated cost of $465,800 for new work, with $1,000 annually for maintenance, exclusive of aids to navigation and local cash contribution.

68. Modification of the existing project is recommended subject to the conditions that local interests:

(*a*) Make a cash contribution of $18,700 toward the construction cost;

(*b*) Furnish free of cost to the United States as and when required, all land, easements, and rights-of-way, necessary for initial work and subsequent maintenance; and

(*c*) Hold and save the United States free from all damages resulting from the construction and the improvement.

H. J. WOODBURY,
Colonel, Corps of Engineers,
Division Engineer.

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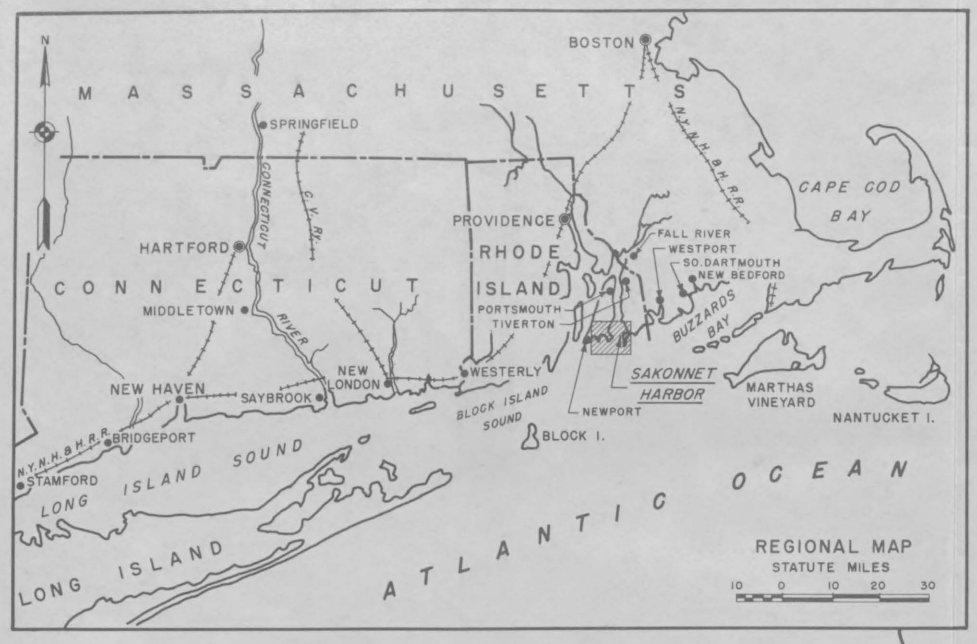
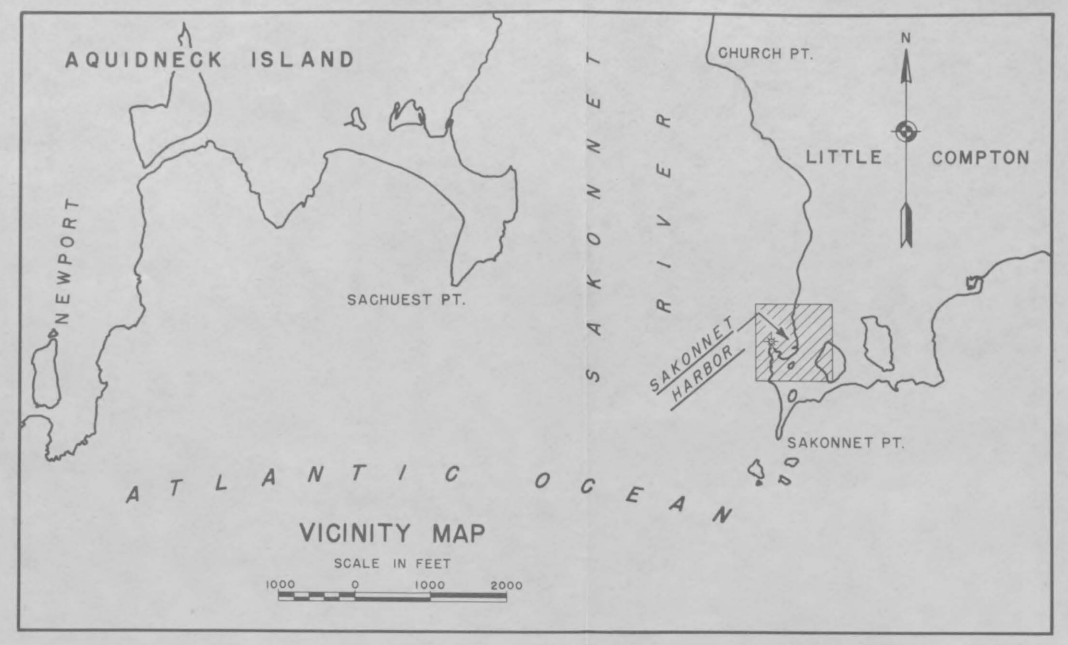
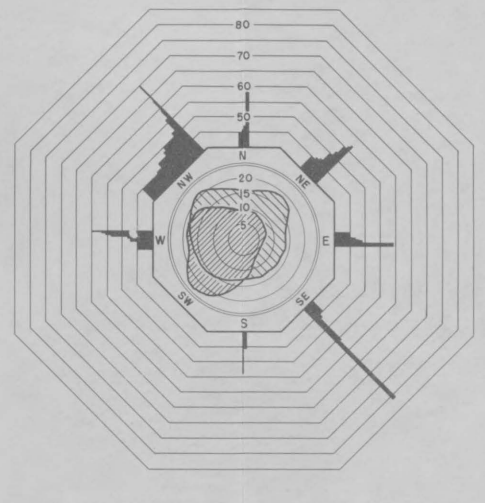






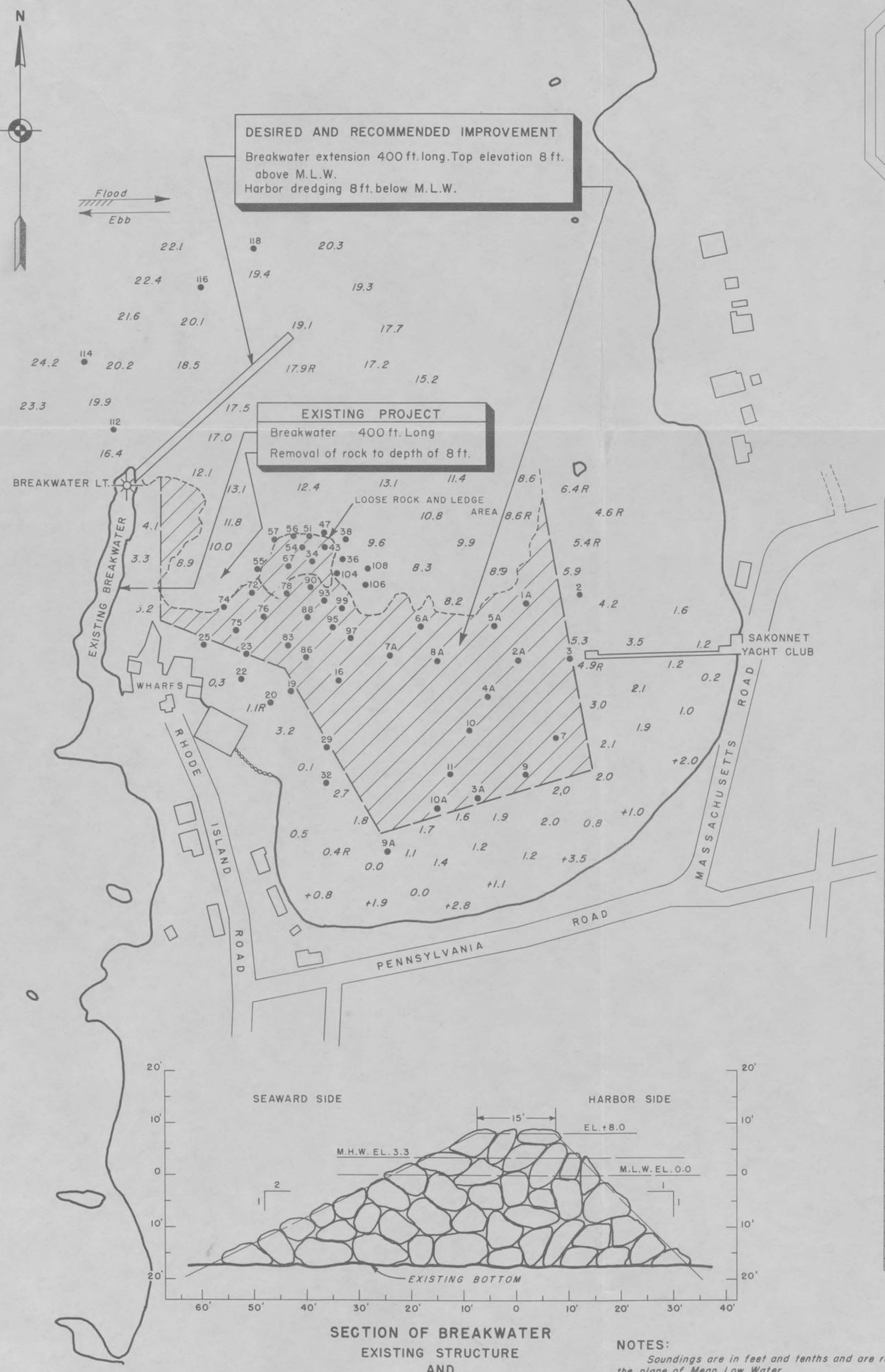
WIND DIAGRAM FOR BLOCK ISLAND, R. I.

LEGEND

AVERAGE VELOCITY IN M.P.H.

DURATION IN PERCENT OF TIME

STORM WINDS IN M.P.H. 10 DAYS



SECTION OF BREAKWATER
EXISTING STRUCTURE
AND
PROPOSED EXTENSION

NOTES:

Soundings are in feet and tenths and are referred to the plane of Mean Low Water.

Hydrography from survey of Sept., 1949.

Topography from this and previous surveys.

8-Foot contour shown thus ----------

LIST OF PROBINGS

NUMBER	DEPTH WATER	DEPTH PROBE	MATERIAL AS INDICATED BY PROBINGS
2	3.3	3.3	2.0 Cubic yard Boulder
3	5.7	7.7	2.0 Sand & Cobbles
7	3.7	8.0	2.7 Sand, 1.6 Very hard packed Sand
9	2.8	6.8	2.8 Sand, 1.2 Sand & Cobbles
10	5.1	7.8	1.6 Sand, 1.1 Hard packed Sand
11	3.9	7.6	2.5 Sand, 1.2 Hard packed Sand
16	4.6	8.5	2.9 Sand, 1.0 Sand & Gravel
19	4.3	8.7	2.7 Sand, 1.7 Sand & Gravel to Rock
20	3.9	3.9	Ledge outcropping
22	3.4	3.4	Rock
23	5.5	8.2	2.7 Sand to Rock
25	6.2	11.0	4.0 Sand, 0.8 Gravel to Rock
29	3.2	7.4	2.9 Sand 1.3 Gravel to Rock
32	1.5	6.3	2.0 Sand, 2.8 Sand & Gravel to Rock
34	+3.7	+3.7	Rock
36	8.3	10.4	2.1 Gravel
38	10.3	11.6	1.3 Coarse Gravel to Rock
43	4.0	4.0	Rock
47	9.6	10.1	0.5 Sand
51	9.7	11.7	2.0 Gravel to Rock
54	3.7	3.7	Rock
55	7.2	7.2	Rock
56	10.4	11.7	1.3 Sand to Rock
57	10.2	11.5	1.3 Sand to Rock
67	0.9	0.9	Rock
72	5.8	5.8	Rock
74	7.9	10.7	2.8 Sand to Rock
75	6.4	10.3	3.9 Sand to Rock
76	7.4	9.4	2.0 Sand to Rock
78	6.8	7.9	1.1 Sand to Rock
83	5.5	8.4	2.9 Hard packed Sand & Gravel to Rock
86	5.0	9.0	4.0 Hard packed Sand to Rock
88	6.7	10.5	2.8 Hard packed Sand, 1.0 Hard packed Gravel
90	7.0	8.2	1.2 Hard packed Gravel to Rock
93	7.1	8.9	1.8 Hard packed Sand to Rock
95	6.3	8.3	2.0 Hard packed Sand to Rock
97	6.0	10.6	4.6 Sand & Gravel
99	6.9	10.8	1.4 Hard packed Sand, 2.5 Sand & Gravel to Rock
104	7.7	8.7	1.0 Sand to Rock
106	8.5	9.6	1.1 Sand to Rock
108	8.7	11.7	3.0 Hard packed Sand to Rock
112	19.9	19.9	Rock
114	22.4	22.4	Rock
116	21.0	25.2	4.2 Sand to Rock
118	20.8	20.8	Rock
1-A	7.4	8.1	0.7 Gravel & Small stones, Hard packed
2-A	6.2	8.2	2.0 Hard packed Sand
3-A	2.7	7.9	5.2 Hard packed Sand, Last 2' very hard
4-A	6.0	8.0	2.0 Very hard packed Sand & Small stone
5-A	7.7	8.0	0.3 Medium Sand
6-A	7.9	8.0	0.1 Sand
7-A	6.4	8.0	1.6 Sand - Last 0.6 very hard packed
8-A	7.0	8.0	1.0 Sand - Hard packed last 0.8
9-A	1.1	7.8	6.7 Hard packed Sand & small Stone
10-A	1.6	8.0	6.4 Hard packed Sand, Last 2' very hard

SAKONNET HARBOR,

LITTLE COMPTON, RHODE ISLAND

IN 1 SHEET SCALE IN FEET

100 0 100 200 300

NEW ENGLAND DIVISION, BOSTON, MASS. AUG. 8, 1950

APPROVAL RECOMMENDED:
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CHIEF, R. & H. OPERATIONS DIVISION

APPROVED:
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REPORT AND SPECIAL STUDIES BRANCH

TO ACCOMPANY SURVEY REPORT
DATED: SEPT. 29, 1950.

DR. BY: C.F.R.
TR. BY: C.F.R.
CH. BY:

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